



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/088,752

07/29/2002

Benoit Couet

US57.0357-WO

8795

7590

08/23/2004

Schlumberger Doll Research
Intellectual Property Law Department
36 Old Quarry Road
Ridgefield, CT 06877

EXAMINER

MILLER, ROSE MARY

ART UNIT

PAPER NUMBER

2856

DATE MAILED: 08/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/088,752

Applicant(s)

COUET ET AL.

Examiner

Rose M Miller

Art Unit

2856

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 June 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,4-22 and 25-41 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1,2,4-11 and 15 is/are allowed.
- 6) ☒ Claim(s) 12,13,16-22,33-35 and 38-41 is/are rejected.
- 7) ☒ Claim(s) 25-32,36 and 37 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 June 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Specification

1. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
3. Claims 12-14, 18-22 and 40-41 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 12, 18 and 40-41 are indefinite as each utilizes the term "adapted" to describe an element in the claim. The term "adapted" means "originally designed for one purpose but modified for another". In as much the Applicant has failed to identify the original purpose or the modification of the recited devices, it is not possible to determine the complete metes and bounds of the claimed invention.

Should the applicant intend the term --for-- such should be made clearer.

Claims 13-14 and 19-22 are rejected as they fail to correct the problems presented by the claims from which they depend.

For the purposes of applying art, the claims have been treated as if the phrases utilizing the word "adapted" were a "means plus function" phrase appropriate to the claimed invention.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 34-35 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Kraus et al. (US 5,734,098)** in view of “**On-site, Near-Real-Time Monitoring of Scale Deposition**” by **D.H. Emmons, G.C. Graham, S.P. Holt and M.M. Jordan** (hereafter referred to as **Emmons et al.**).

Kraus et al. discloses a deposit monitoring apparatus comprising an acoustic device (thickness shear mode resonator) operating in a resonance mode including a monitoring surface directly exposed to fluids in an environment, wherein the deposition of material on the monitoring surface is monitored by measuring a change in resonance frequency of the acoustic device and a power supply supplying said acoustic device with electrical energy.

Kraus et al. discloses the claimed invention with the exception of the monitoring apparatus being located in a hydrocarbon wellbore and specifically measuring the difference between a deposit of 600 microns from a deposit of 1050 microns.

Art Unit: 2856

As for the deposit monitoring device being located in a hydrocarbon wellbore, **Emmons et al.** teaches in column 1, paragraph 4, of page 392 utilizing a thickness shear mode resonator to monitor deposits in "downhole applications" such as the immediate recognition of scaling caused by process changes.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the invention of **Kraus et al.** in a hydrocarbon wellbore as **Emmons et al.** clearly teaches the advantages of utilizing a thickness shear resonator to monitor deposits in a downhole application of a hydrocarbon wellbore.

As for differentiating between a deposit of 600 microns and a deposit of 1050 microns, the system of **Kraus et al.** can easily distinguish between layers of deposits of the recited thicknesses, as the system of **Kraus et al.** is dependant upon the amount of mass deposited, not the thickness of the layer. The mass difference in the two recited layers is sufficient to alter the resonance of the resonator of **Kraus et al.** as long as the **mass** of the layers is sufficient to alter the resonance. **Emmons et al.** teaches that the sensor can detect nanograms of deposit. It is only when the weight of the deposited layer becomes too great that the sensor is overloaded that results in the sensor being unable to distinguish such small differences. As Applicant has not claimed a particular mass which would overload the system of **Kraus et al.**, the system of **Kraus et al.**, in view of the teachings of **Emmons et al.**, discloses the claimed invention.

With regards to claim 35, it would have been obvious to one of ordinary skill in the art at the time the invention was made to either permanently or quasi-permanently mount the deposit monitoring device within the hydrocarbon wellbore as both **Kraus et al.** and **Emmons et al.** clearly teach utilizing the thickness shear mode resonator to automate chemical feed and to determine immediate scaling caused by process changes (see **Kraus et al.** column 5 lines 5-48 and **Emmons et al.**, column 1, paragraph 4 of page 392). One of ordinary skill in the art would have known that the automation of such processes would require a monitoring device to be available permanently.

With regards to claim 39, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the monitoring surface on or near

Art Unit: 2856

one of switches, valves, sleeves, mandrels, downhole separators, and sensors located within the wellbore as is well known throughout the art of wellbore monitoring that such devices are prone to scaling and that the scaling affects the operation of each one of the recited devices. As taught by **Emmons et al.**, the goal is better management of scale resulting in lowered operating costs. Therefore, one of ordinary skill in the art would want to monitor the scaling around the particular device in order to prolong the life of the device by not damaging the device due to the presence of excessive scaling or to compensate for the scaling present (as would be necessary should the scaling affect the output of the sensors claimed). Such actions would prolong the life of the equipment found within the wellbore and thereby lower the operating costs for the wellbore.

7. Claims 40-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Kraus et al.** in view of **Emmons et al.** as applied to claim 34, above, and further in view of **Edgerton (US 4,092,858)**.

With regards to claim 40, **Kraus et al.** in view of **Emmons et al.** discloses the claimed invention with the exception of the deposit removal system using the acoustic device to exert a physical force onto the deposited material. **Edgerton** teaches using an acoustic device to exert a physical force (vibration) onto deposited material in order to remove the deposited material, the removal of such deposits known in the prior art as utilizing "ultrasonic cleaning" to remove unwanted deposits from surfaces. It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the system of **Kraus et al.** in view of **Emmons et al.** with a means to physically remove the unwanted deposits as **Edgerton** teaches the principles of ultrasonic cleaning in order to keep a sensor body free of deposits which would inhibit the operation of the sensor.

With regards to claim 41, **Kraus et al.** in view of **Emmons et al.** discloses the claimed invention with the exception of the deposit removal system being near a sensor. **Edgerton** teaches the ultrasonic cleaning of an acoustic sensor and the surfaces of the acoustic sensor exposed to a particular environment. Therefore, it would have been

Art Unit: 2856

obvious to one of ordinary skill in the art at the time the invention was made to modify **Kraus et al.** in view of **Emmons et al.** to provide for the cleaning of a sensor found within the system as **Edgerton** clearly teaches that such cleaning provides for a better operation of the sensor and prolongs the life of the sensor.

8. Claims 16-18, 22-24, and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Kraus et al.** in view of **Emmons et al.** and **Edgerton**.

Kraus et al. discloses a monitor to measure characteristics of fluids in an environment, the monitor having a monitoring surface that is directly exposed to fluids and a power supply for supplying electrical energy to said monitor.

Kraus et al. discloses the claimed invention with the exception of the monitoring apparatus being located in a hydrocarbon wellbore and a deposit removal system including an acoustic device exerting a physical force on the monitoring surface to at least partially remove a deposition of material from the monitoring surface.

As for the deposit monitoring device being located in a hydrocarbon wellbore, **Emmons et al.** teaches in column 1, paragraph 4, of page 392 utilizing a thickness shear mode resonator to monitor deposits in "downhole applications" such as the immediate recognition of scaling caused by process changes.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the invention of **Kraus et al.** in a hydrocarbon wellbore as **Emmons et al.** clearly teaches the advantages of utilizing a thickness shear resonator to monitor deposits in a downhole application of a hydrocarbon wellbore.

As to the invention including a deposit removal system including an acoustic device exerting a physical force on the monitoring surface to at least partially remove a deposition of material from the monitoring surface, **Edgerton** teaches the ultrasonic cleaning of an acoustic sensor and the surfaces of the acoustic sensor exposed to a particular environment. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the sensor of **Kraus et al.** in view of **Emmons et al.** to provide for the cleaning of a sensor found within the system as

Art Unit: 2856

Edgerton clearly teaches that such cleaning provides for a better operation of the sensor and prolongs the life of the sensor.

With regards to claim 17, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the monitoring surface on or near one of switches, valves, sleeves, mandrels, downhole separators, and sensors located within the wellbore as is well known throughout the art of wellbore monitoring that such devices are prone to scaling and that the scaling affects the operation of each one of the recited devices. As taught by **Emmons et al.**, the goal is better management of scale resulting in lowered operating costs. Therefore, one of ordinary skill in the art would want to monitor the scaling around the particular device in order to prolong the life of the device by not damaging the device due to the presence of excessive scaling or to compensate for the scaling present (as would be necessary should the scaling affect the output of the sensors claimed). Such actions would prolong the life of the equipment found within the wellbore and thereby lower the operating costs for the wellbore.

With regards to claim 18, **Kraus et al.** clearly discloses the monitor comprising an acoustic device operating in a resonance mode and the monitor measures deposition of material on the monitoring surface by measuring a change in resonance frequency of the acoustic device of the monitor.

With regards to claim 22, **Kraus et al.** discloses using a deposition inhibiting or removing chemical agent as part of a deposit removal system (see column 5 lines 5-48).

With regards to claim 33, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide for the acoustic device of the monitor being the acoustic device of the removal system as the system of **Kraus et al.** clearly utilizes the acoustic device both in measuring properties of the fluid environment and in controlling the removal of deposits from the measuring environment.

Allowable Subject Matter

9. Claims 1-11 and 15 are allowed.
10. Claims 12-14 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.
11. Claims 20-21 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.
12. Claims 19, 23-32 and 36-38 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

13. Applicant's arguments, see pages 10-11 of Applicant's Response, filed 01 June 2004, with respect to claims 1, 2, 8-15, and 36 have been fully considered and are persuasive. The 103 rejections of claims 1, 2, 8-15, and 36 have been withdrawn.
14. In response to applicant's argument that the bodily incorporation of Edgerton into Kraus et al. would not work (Applicant's remarks pages 12-13) in regards to claims 10-18, 22, 40 and 41, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

Art Unit: 2856

15. In response to Applicant's argument that the references do not teach "permanent or quasi-permanent installation" as found in claims 17, 35 and 39 (see pages 11, 12, and 13 of Applicant's remarks), the references do teach utilizing the sensors in a "downhole application". It has been found by the courts that making an element of a device "integral" (as in permanently mounting) is not a patentable feature. Therefore, the permanent mounting of a sensor in a downhole application when it is known in the art (as admitted by Applicant in the arguments presented) to utilize a removable sensor would have been an obvious choice to one of ordinary skill in the art at the time the invention was made. The rejections of claims 17, 35 and 39 stand and are made final.

16. In response to applicant's argument that the references fail to show certain features of applicant's invention that Applicant feels is present in claim 22, it is noted that the features upon which applicant relies (i.e., control the deposition on the acoustic device) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Therefore, the addition of the "chemical treatment" of Kraus et al. meets Applicant's claimed invention.

17. In response to applicant's argument that the references do not specifically disclose a relationship between thickness and the amount deposited as found in Claim 34, a recitation of the intended use of the claimed invention (measurement of thickness instead of a measurement of mass) must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963).

Art Unit: 2856

18. In Applicant's conclusion and arguments concerning Claim 33, Applicant argues the references individually. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Finally, in response to applicant's argument that the bodily incorporation of the "cavitations" taught by Edgerton into the systems of Kraus et al. and Emmons et al. is not possible (with regards to claim 33), the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

Conclusion

19. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Art Unit: 2856

20. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rose M Miller whose telephone number is 571-272-2199. The examiner can normally be reached on Monday - Thursday, 7:00 am to 5:30 pm.

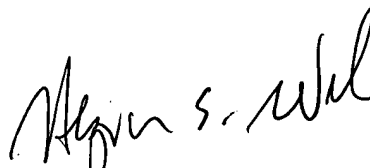
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron Williams can be reached on 571-272-2208. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



RMM

12 August 2004



HEZRON WILLIAMS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800